

Status Report
Smog Check Program Evaluation Project

Prepared for:
California Air Resources Board
Bureau of Automotive Repair

Prepared by:
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Presented to:
California I/M Review Committee

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Background

- In January, Sierra presented a list of analytical tasks to the IMRC.
- Several comments were received encouraging more thorough analysis of roadside data.
- Sierra has performed additional analysis of the roadside data; some of those results are presented today.

Merged Roadside and Smog Check Data

- Roadside data collected between February 2003 and April 2006 were merged with Smog Check data from January 2000 to April 2006.
- A stratified sampling technique is employed at the roadside that over-samples specific model year groups; within those groups, vehicles are selected at random.
- BAR staff carefully validated, and corrected where necessary, VINs and license plates prior to the merge.

“Re-Fail” Rates

- The 2004 ARB/BAR program evaluation report presented an analysis of 2001 roadside data showing that 40% of vehicles that initially failed, but obtained certificates by passing the Smog Check test, were failing at the roadside within a year.
- One of the first steps in the current study was to validate that 40% statistic with more recent roadside data.

Roadside Tailpipe Results for Vehicles Passing a Smog Check Within One Year Prior to the Roadside Inspection					
Model Year Group	Sample Size	Initial Smog Fail		Initial Smog Pass	
		Fail Road	Pass Road	Fail Road	Pass Road
1996+	286	29%	71%	3%	97%
1994-1995	319	58%	42%	11%	89%
1989-1993	1553	47%	53%	15%	85%
1986-1988	607	44%	56%	30%	70%
1981-1985	330	58%	42%	39%	61%
1976-1980	119	63%	37%	35%	65%
1976-1995 VID-Weighted		51%	49%	19%	81%
1976-1999 VID-Weighted		37% - 48%	52% - 63%	13%	87%

Note: The shaded cell is comparable to the 40% “re-fail” rate in the previous roadside analysis.

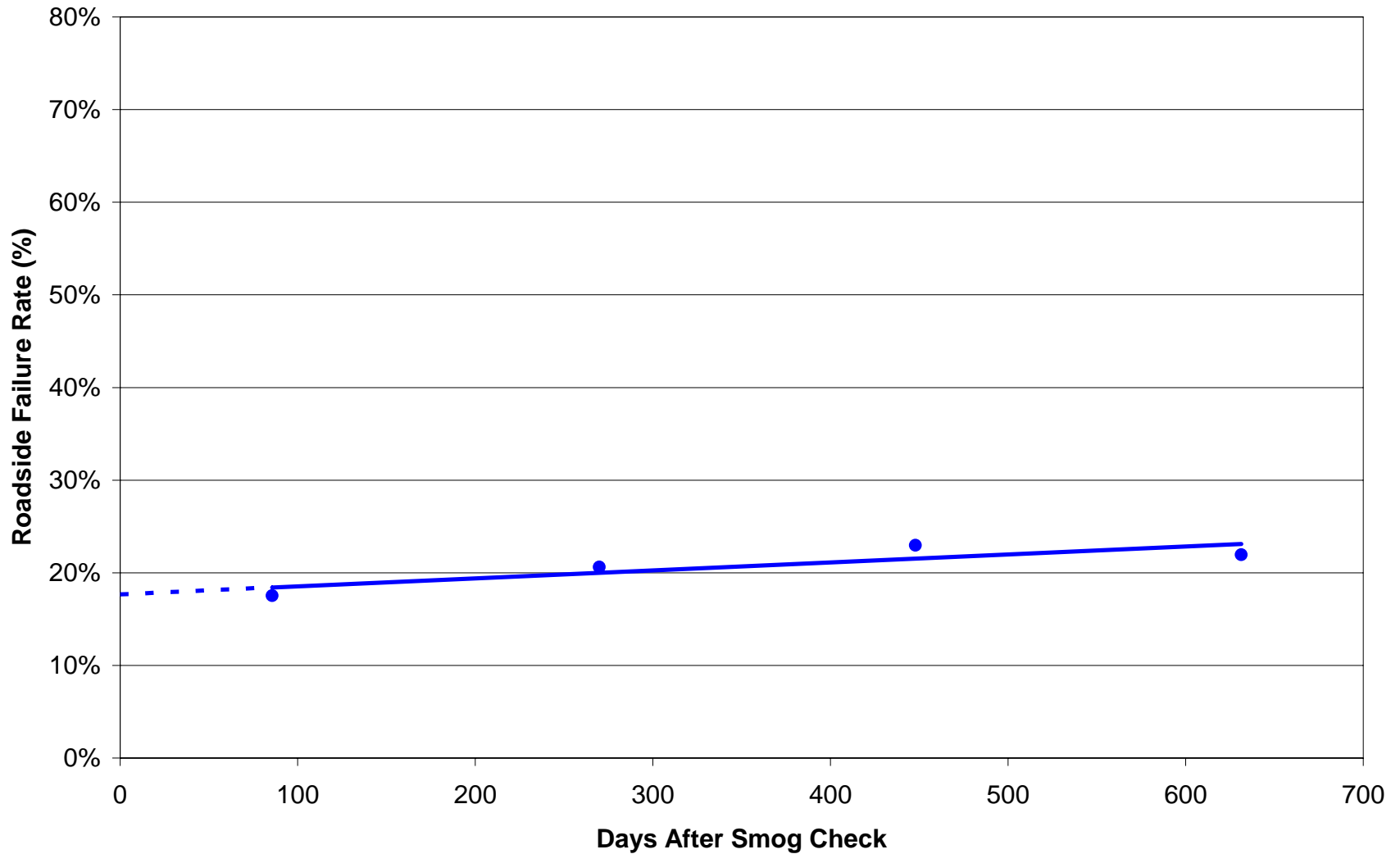
Differences in “Re-Fail” Rate Estimates

- The current results (37% to 48%) are similar to the previous evaluation (40%) when the data are analyzed on the same basis (i.e., fast-pass results are used and roadside results are translated to the fleet based on the VID model year distribution).
- Because of the small sample of 1996+ model year vehicles, the ensuing analyses were based on 1976 to 1995 model years.

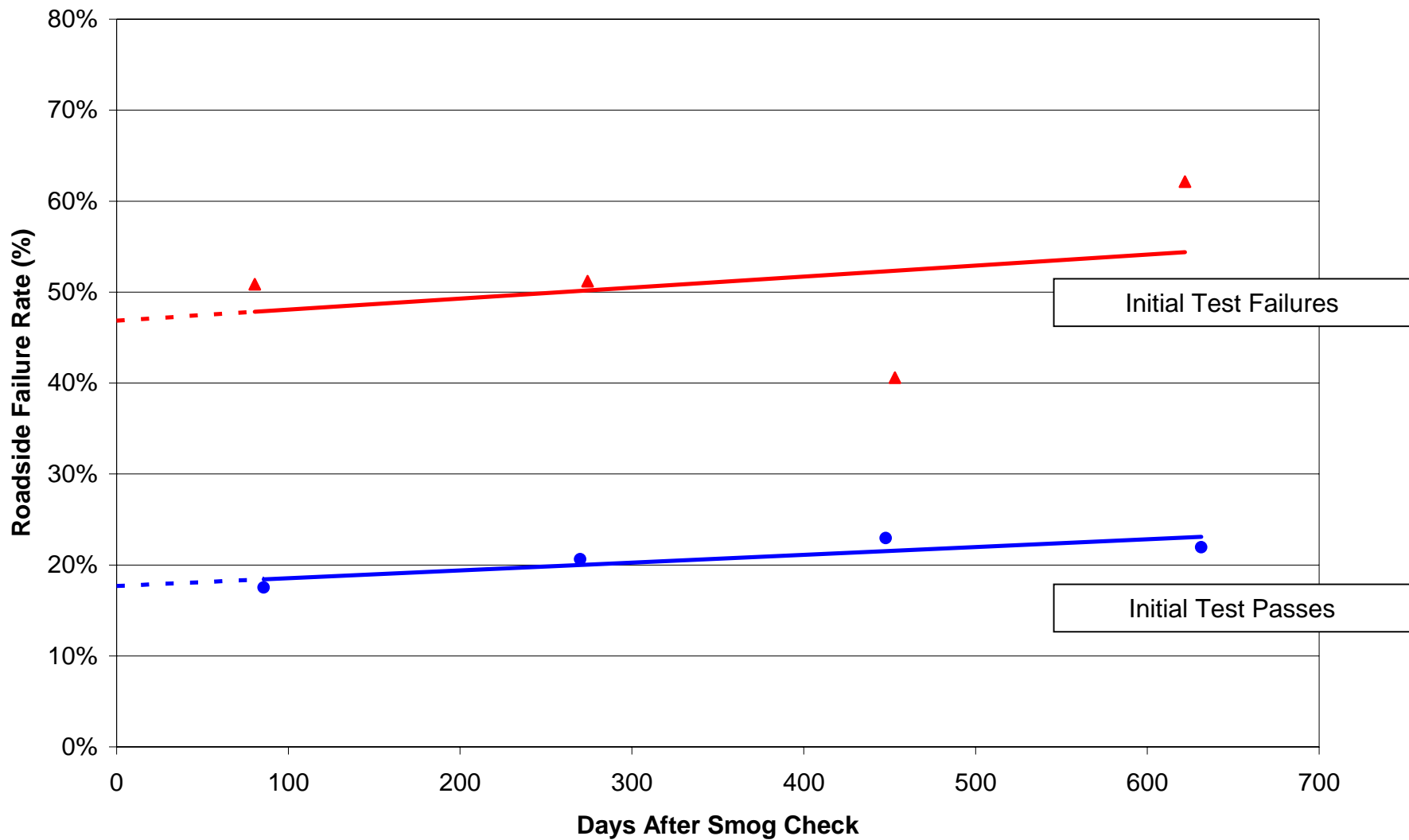
In-Use Deterioration

- The merged Smog Check-Roadside database was used to investigate deterioration after a Smog inspection.
- This was done by calculating roadside failure rates following a Smog Check.
- Differences were observed for initial test passes versus initial test failures.
- The data do not trend to a zero failure rate immediately after a passing Smog test at a Smog station.

Roadside Tailpipe Failure Rates for 1976-1995 Model Year Vehicles for Vehicles Passing Initial Smog Check



Roadside Tailpipe Failure Rates for 1976-1995 Model Year Vehicles for Vehicles Failing Initial/Certified Final Smog Check



Roadside Tailpipe Failure Rates for 1976-1995 Model Year Vehicles for Initial Smog Test Passing and Failing Vehicles Certified at Time = 0

